*supplementary Table 4: Representative chemical analyses (in wt.%) of chromiferous spinels. magnetites and ilmenites of Cameroon dykes*

| Sample | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | Mb | M3 | M3 | M3 | D1a | D1a | D1a | D1a | D1a | D1a | Tb | Tb | Tb | Tb | Tb | Tb | Tb | Tb | Mb | Mb | D1a | Tb | Tb | Tb | Tb | Mb | Mb | Mb | Mb | D1a | D1a | D1a | D1a | Tb | Tb | Tb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mineralname | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | cr-sp | mgt | mgt | mgt | mgt | mgt | mgt | mgt | ilm | ilm | ilm | ilm | ilm | ilm | ilm | ilm | ilm | ilm | ilm |
| Description | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | incl | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm | gm |
| $TiO_2$ | 1.03 | 0.73 | 1.49 | 1.65 | 1.15 | 1.38 | 1.41 | 0.76 | 1.22 | 1.49 | 1.00 | 1.24 | 1.06 | 0.70 | 0.75 | 0.94 | 9.88 | 0.99 | 1.13 | 1.51 | 0.95 | 1.16 | 1.00 | 0.47 | 1.38 | 0.51 | 1.36 | 1.01 | 0.84 | 1.08 | 0.39 | 25.82 | 15.64 | 23.80 | 22.73 | 21.36 | 23.15 | 22.44 | 48.62 | 47.51 | 47.74 | 47.16 | 51.10 | 51.02 | 49.65 | 50.12 | 46.89 | 46.04 | 48.92 |
| $Al_2O_3$ | 35.20 | 34.44 | 33.70 | 29.39 | 35.87 | 33.90 | 34.51 | 31.05 | 34.02 | 33.90 | 34.46 | 34.16 | 35.06 | 34.03 | 34.73 | 35.17 | 10.64 | 32.15 | 34.77 | 32.45 | 32.89 | 26.20 | 38.06 | 38.56 | 35.46 | 39.84 | 39.04 | 36.75 | 42.16 | 39.51 | 40.55 | 1.11 | 2.10 | 1.38 | 1.94 | 1.07 | 2.49 | 3.28 | 0.21 | 0.00 | 0.06 | 0.18 | 0.14 | 0.16 | 0.00 | 0.00 | 0.16 | 0.21 | 0.19 |
| FeO | 20.16 | 20.79 | 19.70 | 21.30 | 19.98 | 20.04 | 19.05 | 21.04 | 19.49 | 19.64 | 19.38 | 20.07 | 19.12 | 20.23 | 22.17 | 21.50 | 46.10 | 21.82 | 20.31 | 23.14 | 20.48 | 32.70 | 19.91 | 21.03 | 28.47 | 19.73 | 24.15 | 26.01 | 19.35 | 19.85 | 19.30 | 64.82 | 66.36 | 66.61 | 65.90 | 70.02 | 67.23 | 66.82 | 45.90 | 45.28 | 45.62 | 44.98 | 43.86 | 47.27 | 48.08 | 48.52 | 44.98 | 50.55 | 46.77 |
| MnO | 0.39 | 0.23 | 0.27 | 0.00 | 0.37 | 0.31 | 0.46 | 0.62 | 0.35 | 0.00 | 0.61 | 0.00 | 0.83 | 0.17 | 0.00 | 0.46 | 2.04 | 0.12 | 0.30 | 0.44 | 0.50 | 0.84 | 0.53 | 0.15 | 0.23 | 0.00 | 0.48 | 0.00 | 0.16 | 0.00 | 0.11 | 1.40 | 1.55 | 0.57 | 1.16 | 1.13 | 1.06 | 0.82 | 1.88 | 1.68 | 2.19 | 1.59 | 1.03 | 1.20 | 0.51 | 0.98 | 1.37 | 1.44 | 1.72 |
| MgO | 13.13 | 14.09 | 13.13 | 12.98 | 14.23 | 13.19 | 13.85 | 12.06 | 14.10 | 14.04 | 13.98 | 13.49 | 14.76 | 12.99 | 13.00 | 13.38 | 0.42 | 12.17 | 12.26 | 11.55 | 12.08 | 5.52 | 14.87 | 14.65 | 10.64 | 15.39 | 14.02 | 11.59 | 15.92 | 14.97 | 15.48 | 0.00 | 0.32 | 0.19 | 0.85 | 0.00 | 0.07 | 0.07 | 0.04 | 0.15 | 0.39 | 0.03 | 1.82 | 0.06 | 0.21 | 0.00 | 1.30 | 0.06 | 0.00 |
| $Cr_2O_3$ | 28.09 | 29.48 | 29.06 | 33.68 | 27.71 | 27.65 | 30.08 | 29.70 | 28.83 | 29.04 | 30.09 | 28.86 | 27.47 | 27.30 | 29.60 | 28.71 | 27.62 | 30.61 | 28.71 | 29.57 | 28.37 | 28.94 | 21.47 | 20.66 | 19.67 | 20.63 | 22.29 | 19.81 | 19.67 | 21.48 | 21.64 | 0.46 | 6.05 | 2.24 | 0.49 | 0.00 | 0.00 | 0.08 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.20 | 0.15 | 0.32 | 0.09 | 0.00 |
| $V_2O_3$ | 0.56 | 0.67 | 0.53 | 0.37 | 0.50 | 0.44 | 0.61 | 0.60 | 0.65 | 0.54 | 0.63 | 0.69 | 0.88 | 0.90 | 0.30 | 0.56 | 0.71 | 0.97 | 0.54 | 0.18 | 0.65 | 0.74 | 0.17 | 0.31 | 0.39 | 0.40 | 0.36 | 0.66 | 0.46 | 0.20 | 0.29 | 0.79 | 0.92 | 0.84 | 0.32 | 0.04 | 0.95 | 0.79 | 0.40 | 0.32 | 0.63 | 0.41 | 0.37 | 0.31 | 0.24 | 0.48 | 0.28 | 0.81 | 0.49 |
| NiO | 0.27 | 0.72 | 0.30 | 0.00 | 0.32 | 0.09 | 0.23 | 0.00 | 0.07 | 0.00 | 0.00 | 0.20 | 0.38 | 0.00 | 0.35 | 0.00 | 0.00 | 0.64 | 0.00 | 0.12 | 0.22 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.25 | 0.53 | 0.06 | 0.19 | 0.16 | 0.06 | 0.00 | 0.42 | 0.00 | 0.00 | 0.00 | 0.30 | 0.49 | 0.00 | 0.00 | 0.44 | 0.53 | 0.23 | 0.41 | 0.00 | 0.00 | 0.00 | 0.25 |
| sum | 98.8 | 101.1 | 98.2 | 99.4 | 100.1 | 97.0 | 100.2 | 95.8 | 98.7 | 98.7 | 100.2 | 98.7 | 99.6 | 96.3 | 100.9 | 100.7 | 97.4 | 99.5 | 98.0 | 99.0 | 96.1 | 96.1 | 96.2 | 95.8 | 96.2 | 96.5 | 102.0 | 96.4 | 98.6 | 97.3 | 97.9 | 94.5 | 92.9 | 96.1 | 93.4 | 93.6 | 94.9 | 94.6 | 98.0 | 95.3 | 96.9 | 95.1 | 98.9 | 100.6 | 99.3 | 100.5 | 95.5 | 99.4 | 99.2 |
| $Fe_2O_3$wt% | 2.78 | 4.66 | 2.19 | 3.46 | 3.74 | 3.13 | 2.12 | 4.14 | 3.60 | 3.05 | 3.20 | 2.84 | 4.63 | 3.70 | 3.99 | 4.08 | 7.60 | 3.16 | 1.55 | 3.35 | 2.90 | 6.53 | 6.02 | 6.95 | 7.93 | 6.10 | 6.64 | 6.87 | 5.28 | 4.82 | 5.45 | 13.64 | 26.36 | 16.50 | 19.23 | 23.68 | 18.19 | 18.29 | 4.91 | 5.51 | 6.45 | 5.11 | 2.41 | 3.41 | 4.79 | 5.20 | 7.52 | 12.08 | 6.10 |
| FeOwt% | 17.66 | 16.59 | 17.73 | 18.19 | 16.62 | 17.23 | 17.15 | 17.31 | 16.25 | 16.90 | 16.50 | 17.51 | 14.95 | 16.90 | 18.58 | 17.83 | 39.26 | 18.98 | 18.92 | 20.12 | 17.87 | 26.83 | 14.49 | 14.78 | 21.33 | 14.24 | 18.17 | 19.83 | 14.59 | 15.52 | 14.39 | 52.55 | 42.64 | 51.76 | 48.60 | 48.71 | 50.86 | 50.36 | 41.49 | 40.32 | 39.82 | 40.38 | 41.69 | 44.20 | 43.77 | 43.84 | 38.22 | 39.68 | 41.28 |
| sum | 99.1 | 101.6 | 98.4 | 99.7 | 100.5 | 97.3 | 100.4 | 96.2 | 99.1 | 99.0 | 100.5 | 99.0 | 100.0 | 96.7 | 101.3 | 101.1 | 98.2 | 99.8 | 98.2 | 99.3 | 96.4 | 96.8 | 96.8 | 96.5 | 97.0 | 97.1 | 102.6 | 97.0 | 99.1 | 97.8 | 98.5 | 95.8 | 95.6 | 97.7 | 95.3 | 96.0 | 96.8 | 96.4 | 98.5 | 95.8 | 97.5 | 95.6 | 99.2 | 101.0 | 99.8 | 101.0 | 96.3 | 100.6 | 99.8 |
| Ti | 0.183 | 0.127 | 0.267 | 0.297 | 0.200 | 0.249 | 0.246 | 0.141 | 0.216 | 0.264 | 0.175 | 0.221 | 0.185 | 0.127 | 0.131 | 0.164 | 2.141 | 0.177 | 0.204 | 0.273 | 0.174 | 0.229 | 0.176 | 0.083 | 0.252 | 0.089 | 0.230 | 0.182 | 0.143 | 0.188 | 0.067 | 0.755 | 0.458 | 0.682 | 0.663 | 0.627 | 0.667 | 0.647 | 0.940 | 0.942 | 0.929 | 0.939 | 0.967 | 0.960 | 0.947 | 0.944 | 0.918 | 0.873 | 0.932 |
| Al | 9.776 | 9.368 | 9.467 | 8.316 | 9.767 | 9.594 | 9.466 | 9.034 | 9.435 | 9.416 | 9.443 | 9.513 | 9.585 | 9.686 | 9.512 | 9.601 | 3.612 | 9.049 | 9.788 | 9.186 | 9.482 | 8.097 | 10.541 | 10.700 | 10.177 | 10.897 | 10.358 | 10.436 | 11.217 | 10.793 | 10.942 | 0.051 | 0.096 | 0.062 | 0.088 | 0.049 | 0.113 | 0.148 | 0.006 | 0.000 | 0.002 | 0.006 | 0.004 | 0.005 | 0.000 | 0.000 | 0.005 | 0.006 | 0.006 |
| $Fe^{3+}$ | 0.493 | 0.810 | 0.394 | 0.625 | 0.650 | 0.565 | 0.371 | 0.769 | 0.638 | 0.541 | 0.559 | 0.504 | 0.808 | 0.672 | 0.698 | 0.711 | 1.649 | 0.567 | 0.278 | 0.606 | 0.534 | 1.288 | 1.064 | 1.231 | 1.454 | 1.066 | 1.125 | 1.246 | 0.898 | 0.840 | 0.939 | 0.399 | 0.773 | 0.473 | 0.561 | 0.695 | 0.524 | 0.527 | 0.095 | 0.109 | 0.126 | 0.102 | 0.046 | 0.064 | 0.091 | 0.098 | 0.147 | 0.229 | 0.116 |
| $Fe^{2+}$ | 3.480 | 3.202 | 3.533 | 3.652 | 3.212 | 3.460 | 3.337 | 3.574 | 3.198 | 3.330 | 3.209 | 3.461 | 2.901 | 3.413 | 3.610 | 3.454 | 9.462 | 3.791 | 3.780 | 4.041 | 3.656 | 5.885 | 2.849 | 2.911 | 4.344 | 2.764 | 3.422 | 3.995 | 2.755 | 3.008 | 2.756 | 1.709 | 1.389 | 1.650 | 1.576 | 1.590 | 1.629 | 1.614 | 0.892 | 0.889 | 0.862 | 0.894 | 0.877 | 0.925 | 0.928 | 0.918 | 0.832 | 0.836 | 0.874 |
| Mn | 0.078 | 0.045 | 0.055 | 0.000 | 0.072 | 0.064 | 0.091 | 0.129 | 0.070 | 0.000 | 0.121 | 0.000 | 0.163 | 0.035 | 0.000 | 0.091 | 0.498 | 0.024 | 0.060 | 0.089 | 0.103 | 0.187 | 0.106 | 0.031 | 0.047 | 0.000 | 0.092 | 0.000 | 0.030 | 0.000 | 0.021 | 0.046 | 0.051 | 0.018 | 0.038 | 0.037 | 0.034 | 0.027 | 0.041 | 0.037 | 0.048 | 0.036 | 0.022 | 0.025 | 0.011 | 0.021 | 0.030 | 0.031 | 0.037 |
| Mg | 4.612 | 4.846 | 4.665 | 4.646 | 4.901 | 4.721 | 4.807 | 4.437 | 4.945 | 4.934 | 4.845 | 4.750 | 5.103 | 4.679 | 4.504 | 4.619 | 0.181 | 4.332 | 4.365 | 4.137 | 4.404 | 2.158 | 5.211 | 5.142 | 3.861 | 5.325 | 4.705 | 4.162 | 5.356 | 5.171 | 5.283 | 0.000 | 0.019 | 0.011 | 0.049 | 0.000 | 0.004 | 0.004 | 0.001 | 0.006 | 0.015 | 0.001 | 0.068 | 0.002 | 0.008 | 0.000 | 0.050 | 0.002 | 0.000 |
| Cr | 5.233 | 5.378 | 5.477 | 6.393 | 5.063 | 5.248 | 5.536 | 5.797 | 5.364 | 5.412 | 5.531 | 5.392 | 5.038 | 5.213 | 5.440 | 5.257 | 6.293 | 5.782 | 5.423 | 5.616 | 5.486 | 6.001 | 3.990 | 3.845 | 3.787 | 3.786 | 3.968 | 3.774 | 3.510 | 3.936 | 3.917 | 0.014 | 0.186 | 0.067 | 0.015 | 0.000 | 0.000 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.004 | 0.003 | 0.007 | 0.002 | 0.000 |
| V | 0.106 | 0.124 | 0.101 | 0.072 | 0.092 | 0.086 | 0.113 | 0.119 | 0.123 | 0.103 | 0.118 | 0.130 | 0.164 | 0.175 | 0.055 | 0.103 | 0.164 | 0.186 | 0.103 | 0.034 | 0.128 | 0.155 | 0.031 | 0.059 | 0.077 | 0.074 | 0.066 | 0.128 | 0.084 | 0.036 | 0.053 | 0.025 | 0.029 | 0.026 | 0.010 | 0.001 | 0.029 | 0.024 | 0.008 | 0.007 | 0.013 | 0.009 | 0.008 | 0.006 | 0.005 | 0.010 | 0.006 | 0.016 | 0.010 |
| Ni | 0.052 | 0.133 | 0.057 | 0.000 | 0.059 | 0.017 | 0.043 | 0.000 | 0.013 | 0.000 | 0.000 | 0.039 | 0.072 | 0.000 | 0.065 | 0.000 | 0.000 | 0.122 | 0.000 | 0.023 | 0.043 | 0.000 | 0.042 | 0.000 | 0.000 | 0.000 | 0.045 | 0.103 | 0.011 | 0.036 | 0.029 | 0.002 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.009 | 0.010 | 0.000 | 0.000 | 0.009 | 0.011 | 0.005 | 0.008 | 0.000 | 0.000 | 0.000 | 0.005 |
| sum | 24.013 | 24.033 | 24.014 | 24.000 | 24.015 | 24.004 | 24.011 | 24.000 | 24.003 | 24.000 | 24.000 | 24.010 | 24.018 | 24.000 | 24.016 | 24.000 | 24.000 | 24.031 | 24.000 | 24.006 | 24.011 | 24.000 | 24.010 | 24.000 | 24.000 | 24.000 | 24.011 | 24.026 | 24.003 | 24.009 | 24.007 | 3.000 | 3.000 | 3.003 | 3.000 | 3.000 | 3.000 | 3.002 | 2.010 | 2.000 | 2.001 | 2.004 | 2.005 | 2.003 | 2.003 | 2.001 | 2.000 | 2.001 | 2.003 |
| Ulv | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 79 | 52 | 73 | 70 | 65 | 71 | 69 | - | - | - | - | - | - | - | - | - | - | - |
| Ilm | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 95 | 95 | 94 | 95 | 98 | 97 | 95 | 95 | 93 | 88 | 95 |
| Mg# | 57 | 60 | 57 | 56 | 60 | 58 | 59 | 55 | 61 | 60 | 60 | 58 | 64 | 58 | 56 | 57 | 2 | 53 | 54 | 51 | 55 | 27 | 65 | 64 | 47 | 66 | 58 | 51 | 66 | 63 | 66 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cr# | 35 | 36 | 37 | 43 | 34 | 35 | 37 | 39 | 36 | 36 | 37 | 36 | 34 | 35 | 36 | 35 | 64 | 39 | 36 | 38 | 37 | 43 | 27 | 26 | 27 | 26 | 28 | 27 | 24 | 27 | 26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Chromiferousspinels structural formulas werecalculated on the basis of 32 oxygens and 24 cations; magnetiteswerecalculated on the basis of 4 oxygens and 3 cations; ilmeniteswerecalculated on the basis of 3 oxygens and 2 cations; Cr# = atomic 100*Cr/(Cr+Al). Mg# atomic 100*Mg/(Mg+$Fe^{2+}$).
Ulv = ulvöspinel mol.%; Ilm = ilmenite mol.%; gm = groundmass; incl = inclusion; cr-sp = chromiferousspinel; mgt = magnetite; ilm = ilmenite.